

WHAT IS CLAIMED

1. A continuous high-frequency oscillation breathing treatment apparatus comprising:

a source of gas under pressure;

a reduction regulator for regulating the flow from gas source;

means for interrupting continuous positive gas flow at a rate of at least 1 hertz and at most 15 hertz whereby the gas flow becomes pulsatile with a substantially constant pressure amplitude;

a patient interface circuit that incorporates a fixed venturi tube, encased in a shroud with at least one aperture of predetermined size, open to the ambient to allow ingress and egress of flow, and an aerosol entrainment port connectable to a nebulizer for entrainment of aerosol;

said means for interrupting continuous gas flow in combination with said at least one aperture calibrated to allow exhalation and prevent stacking of successive volumes of gas in the airway of the patient.

2. The apparatus according to claim 1, wherein at least one of gas flow adjustment and pulsatile rate adjustment is pre-set at factory, whereby most of the optimal settings are predetermined and simplicity of use is maximized.

3. The apparatus according to claim 1, wherein at least one aperture can be partially occluded in order to increase and decrease the ingress and egress of flow.

4. The apparatus according to claim 1, further including a means to prevent inadvertent occlusion of said apertures.

5. The apparatus according to claim 1, further including a timing device that can at least one of automatically turn off said apparatus at end of therapy session and alarm to notify patient that treatment session is over.

6. The apparatus according to claim 1, further including a means for tracking use of said apparatus, whereby patient compliance with breathing therapy can be ascertained.

7. The apparatus according to claim 1, further including a medicament reservoir from which can be pumped medicament into a nebulizer connected to patient interface circuit.

8. The apparatus according to claim 1, wherein at least one aperture is designated as a primary for ingress of gas and is connected to a specified gas source in order to control the content of the gas being entrained, and at least one aperture is designated as primary for egress of gas and is connected to a reservoir that collects the evacuated gas and is open to the ambient.

9. The apparatus according to claim 1, wherein said patient interface circuit is, at least one of, connected to and incorporated within a ventilator circuit.

10. The apparatus according to claim 1, wherein said gas under pressure is supplied from an electronic compressor within the apparatus.

11. The apparatus according to claim 1, wherein at least some of the components of the apparatus include an identification device to indicate their compatibility with other components of the apparatus.

12. The apparatus according to claim 11, wherein said means of identification comprises at least one of a radio frequency identification (RFID) tag device and an RFID transceiver device.

13. The patient interface circuit for use with a continuous high-frequency oscillation breathing treatment apparatus comprising:

means of connecting patient interface circuit to a continuous high-frequency oscillation breathing treatment apparatus;

a fixed venturi tube, encased in a shroud with at least one aperture of predetermined size, open to the ambient to allow ingress and egress of flow, and an aerosol entrainment port connectable to a nebulizer for entrainment of aerosol;

said at least one aperture of patient interface circuit calibrated with continuous high-frequency oscillation breathing treatment apparatus to allow exhalation and prevent stacking of successive volumes of gas in the airway of the patient.

14. A continuous high-frequency oscillation breathing treatment apparatus comprising:

a source of gas under pressure;

a reduction regulator for regulating the flow from gas source;

means for interrupting continuous positive gas flow at a predetermined, pre-set rate of at least 1 hertz and at most 15 hertz whereby the gas flow becomes pulsatile with a substantially constant pressure amplitude;

a patient interface circuit that incorporates a venturi tube, encased in a shroud with at least one aperture of predetermined size, open to the ambient to allow ingress and egress of flow,

aerosol entrainment port connectable to a nebulizer for entrainment of aerosol;

said means for interrupting gas flow in combination with said at least one aperture calibrated to allow exhalation and prevent stacking of successive volumes of gas in the airway of the patient.

15. The apparatus according to claim 14, wherein gas flow adjustment to said apparatus is pre-set at factory.

16. The apparatus according to claim 14, wherein at least one aperture can be partially occluded in order to increase and decrease the ingress and egress of flow.

17. The apparatus according to claim 14, further including a means to prevent inadvertent occlusion of said apertures.

18. The apparatus according to claim 14, further including a timing device that can at least one of automatically turn off said apparatus at end of therapy session and alarm to notify patient that treatment session is over.

19. The apparatus according to claim 14, further including a means for tracking use of said apparatus, whereby patient compliance with breathing therapy can be ascertained.

20. The apparatus according to claim 14, further including a medicament reservoir from which can be pumped medicament into a nebulizer connected to patient interface circuit.

21. The apparatus according to claim 14, wherein at least one of said aperture is designated as primary for ingress of gas and is connected to a specified gas source in order to control the content of the gas being entrained, and at least one of said aperture is designated as primary for egress of gas and is at least one of connected to a reservoir that collects the evacuated gas and open to the ambient.

22. The apparatus according to claim 14, wherein said patient interface circuit is at least one of connected to and incorporated within a ventilator circuit.

23. The apparatus according to claim 14, wherein said gas under pressure is supplied from an electronic compressor within the apparatus.

24. The apparatus according to claim 14, wherein at least some of the components of the apparatus include an identification device to

indicate their compatibility with other components of the apparatus.

25. The apparatus according to claim 24, wherein said means of identification comprises at least one of a radio frequency identification (RFID) tag device and an RFID transceiver device.

26. A continuous high-frequency oscillation breathing treatment apparatus comprising:

- a source of gas under pressure;

- a pre-set reduction regulator for regulating the flow from gas source;

- means for interrupting positive gas flow resulting in a predetermined, pre-set rate of at least 1 hertz and at most 15 hertz whereby the gas flow becomes pulsatile with a substantially constant pressure amplitude;

- a patient interface circuit that incorporates a venturi tube, encased in a shroud with at least one aperture of predetermined size, open to the ambient, aerosol entrainment port connectable to a nebulizer for entrainment of aerosol;

- said means for interrupting continuous gas flow in combination with said at least one aperture calibrated to allow exhalation and prevent stacking of successive volumes of gas in the airway of the patient.

27. The apparatus according to claim 26, wherein at least one aperture can be partially occluded in order to increase and decrease the ingress and egress of flow.

28. The apparatus according to claim 26, further including a means to prevent inadvertent occlusion of said apertures.

29. The apparatus according to claim 26, further including a timing device that can at least one of automatically turn off said apparatus at end of therapy session and alarm to notify patient that treatment session is over.

30. The apparatus according to claim 26, further including a means for tracking use of said apparatus, whereby patient compliance with breathing therapy can be ascertained.

31. The apparatus according to claim 26, further including a medicament reservoir from which can be pumped medicament into a nebulizer connected to patient interface circuit.

32. The apparatus according to claim 26, wherein at least one of said aperture is designated as primary for ingress of gas and is connected to a specified gas source in order to control the content of the gas being entrained, and at least one of said aperture is

designated as primary for egress of gas and is at least one of connected to a reservoir that collects the evacuated gas and open to the ambient.

33. The apparatus according to claim 26, wherein said patient interface circuit is at least one of connected to and incorporated within a ventilator circuit.

34. The apparatus according to claim 26, wherein said gas under pressure is supplied from an electronic compressor within the apparatus.

35. The apparatus according to claim 26, wherein at least some of the components of the apparatus include an identification device to indicate their compatibility with other components of the apparatus.

36. The apparatus according to claim 35, wherein said means of identification comprises at least one of a radio frequency identification (RFID) tag device and an RFID transceiver device.

37. A continuous high-frequency oscillation breathing treatment apparatus comprising:

- a source of gas under pressure;
- a reduction regulator for regulating the flow from gas source;
- a patient interface circuit that incorporates a means for interrupting positive gas flow at a rate of at least 1 hertz and at most 15 hertz whereby the gas flow becomes pulsatile with a substantially constant pressure amplitude, a fixed venturi tube, encased in a shroud with at least one aperture of predetermined size, open to the ambient to allow ingress and egress of flow, an aerosol entrainment port connectable to a nebulizer for entrainment of aerosol, and said means for interrupting gas flow in combination with said at least one aperture calibrated to allow exhalation and prevent stacking of successive volumes of gas in the airway of the patient.

38. The apparatus according to claim 37, wherein at least one of gas flow and pulsatile rate adjustments to said apparatus is pre-set at factory, whereby most of the optimal settings are predetermined and simplicity of use is maximized.

39. The apparatus according to claim 37, wherein at least one aperture can be partially occluded in order to increase and decrease the ingress and egress of flow.

40. The apparatus according to claim 37, further including a means to prevent inadvertent occlusion of said apertures.

41. The apparatus according to claim 37, further including a timing device that can at least one of automatically turn off said apparatus at end of therapy session and alarm to notify patient that treatment session is over.

42. The apparatus according to claim 37, further including a means for tracking use of said apparatus, whereby patient compliance with breathing therapy can be ascertained.

43. The apparatus according to claim 37, further including a medicament reservoir from which can be pumped medicament into a nebulizer connected to patient interface circuit.

44. The apparatus according to claim 37, wherein at least one of said aperture is designated as primary for ingress of gas and is connected to a specified gas source in order to control the content of the gas being entrained, and at least one of said aperture is designated as primary for egress of gas and is at least one of connected to a reservoir that collects the evacuated gas and open to the ambient.

45. The apparatus according to claim 37, wherein said patient interface circuit is at least one of connected to and incorporated within a ventilator circuit.

46. The apparatus according to claim 37, wherein said gas under pressure is supplied from an electronic compressor within the apparatus.

47. The apparatus according to claim 37, wherein at least some of the components of the apparatus include an identification device to indicate their compatibility with other components of the apparatus.

48. The apparatus according to claim 47, wherein said means of identification comprises at least one of a radio frequency identification (RFID) tag device and an RFID transceiver device.